

We thank the reviewer for the thorough and constructive feedback. Below, we address each point in detail and indicate the corresponding changes in the revised manuscript.

In this paper, the authors present a methodology for calculation of the probability of static overload of a wind turbine pitch bearing based on exceedance of the static safety factor as determined by the recently published pitch bearing design guide (Stammmler et al 2024). Appreciable revisions have been made based on reviewer comments to the revised submission and I believe these revisions significantly improve the paper. I only offer a few very minor and final clarifications. Pending these, I recommend the manuscript be accepted for publication.

1 Introduction

- Line 62: New text here refers to a “clear” stress threshold. Although 4200 MPa is discussed in ISO 76 and the DG03, both acknowledge that 4200 MPa is an approximate value for ball bearings. Indeed, the DG03 and Lai (2009) do refer to the possibility of higher values in some situations. I recommend that “clear” simply be deleted here.

The word “clear” is removed.

- Line 74: Similar to the previous comment, I believe it would be clearer and better tie to the rest of the manuscript to 4200 MPa here rather than 0.0001D. That is “The current work assumes a contact stress of 4200 MPa as the criteria for static overload; however, there is a possibility that indentation and core crushing damage do not occur in all bearings at this level.”

The text is modified as below

“The current work assumes a contact stress of 4200 MPa as the criterion for static overload; however, there is a possibility that indentation and core crushing damage do not occur in all bearings at this level.”

2.3 Wind sites

- Text between Table 3 and Table 4: I am glad the discussion of the wind sites has been moved here; however, it can still be improved. Table 3 includes the typical reference TIs. Table 4 then “leaps” to extreme TIs (to 4 significant digits...is that really necessary?). These extreme TIs are described as the worst of the worst (i.e. maximum value at each wind speed at each site rather than average value). Missing between the two is the TI for the ETM as this is also later used in much of the analysis. *What would be helpful here is some text and a plot similar to that provided in the authors’ response that compares the TI for ETM and the extreme TI for at least a few of the sites – especially Aysha and Kebribeyah.* The main point being that these 2 sites have extreme turbulence levels well above that of even ETM for class 1A (or maybe even A+) and certainly above NTM for class 1A. Others are relatively similar. Section 2.3 would then serve as a nice preview of Section 3.3 and 4.

The following text is added to this section.

“In this study, the extreme turbulence model (ETM) was investigated. ETM is calculated according to IEC 61400-1 (2019) and prescribes rarer, higher-turbulence realizations that are

used later in our ULS analysis. The extreme turbulence intensity at wind sites refers to the maximum turbulence intensity within each wind speed range. To connect the IEC references to the site data, the ETM turbulence intensity curve for IEC classes was computed and compared with the per-bin extreme TI observed at representative sites. Figure 1 shows that Aysha and Kebribeyah exhibit extreme TI values substantially above ETM for Class IA (and, at some wind speeds, even above IA+), while Thanh Hai, Mil Nader, and Flatirons are closer to ETM.”

In addition, a plot is added to the text to clarify the comparison between the wind sites and IEC ETM.

Regarding 4 significant digits in TI, it should be noted that software like TurbSim accepts turbulence intensity in percent; therefore, we present TI with 4 digits.

Minor grammatical comments:

- Line 31: Because this is an inline citation, an “and” is needed between Germanischer Lloyd (2010); and Stammeler et al. (2024).
The citation is corrected accordingly.
- Table 2: I recommend variables Z and I be italicized like other variables.
The variable Z is changed to italic.
- Line 95: A space is missing at “.Some”.
Space is added in line 95